

IMS

Services and Revenue

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“The advent of all-IP-based cellular networks is likely to have a profound effect on the operation and capacity of those networks as well as presenting profit making opportunities to independent application developers. 3GPP’s IP Multimedia Subsystem (IMS) is at the forefront of these developments. This paper describes the forces driving the introduction of this technology in terms of the services provided and revenues expected. It is basic introductory text for anyone interested in the new IMS-based services.”

Introduction

In the previous decades we have seen a rapid increase in the penetration of the Internet into people's lives. This has had a profound effect on the way people communicate. The core technology driving this change has been Internet Protocol (IP), supplemented by application layer protocols such as HTTP (for web-browser to web-server communication) and SMTP (for email client to email-server communication). Unhindered access and open standards has led to an abundance of innovative applications. This in turn has led to a sea-change in user expectation, resulting in further demands such as greater support for services anytime and anywhere (mobility); and provision of real-time applications such as multimedia delivery, instant messaging, VoIP and video conferencing. However, poor communication performance during the transition from one geographical location to another, the best-effort nature of the Internet, and endpoint compatibility issues has slowed further progress towards these goals.

In contrast, the telecommunications industry has grown and evolved over a period of a hundred years with the aim of delivering a reliable, high quality of service (QoS) network. However, the telecom providers are relatively devoid of end user applications. We may think of voice, voice-mail, data, SMS, MMS and more recently email pushed to the handset; but it is a poor showing for a hundred years of development.

It is against this backdrop that the cellular network providers and their associated standardisation organisations have been working on the next generation of telecoms infrastructure — 4G in this case. They have defined a core network architecture that employs packet-based (i.e. IP-based) systems to support mobile and high-performance multimedia sessions. The most visible of these architectures is 3GPP's IMS (IP Multimedia Subsystem), part of their Long Term Evolution (LTE) blueprint.

The IMS Vision

IMS has been designed by to deliver multimedia services — including voice — to customers, on any device, anywhere and at any time. For them, it is the convergence of the Internet and the telecoms. It provides cellular operators with the ability to rapidly deploy new user services and applications to customers in an access independent manner. It permits more accurate user identification; the advertisement of their location, status and the capabilities of their device; and affords full control over the delivery of services they are authorised to use and receive. The specification creates a unified signalling, management and control system based on the Session Initiation Protocol (SIP) communication standard.

At the same time the architecture integrates a service delivery environment to allow simple deployment of innovative end user applications and services. Moreover, it is access independent: available to mobile or fixed telephone devices or any device with Internet access such as a PC or Internet Protocol Television (IPTV). It is likely that the IMS core will be Internet addressable, with the user simply needing to authenticate themselves to use the services. This will enable new types of applications, including the much talked about three screen services (IPTV, PC, and mobile devices). The simple act of being able to continue a video service session as one moves from the cellular network to a Wi-Fi network and eventually into the home PC or TV will be a powerful lure for customers.

Independent, commercial and governmental organisations will target this infrastructure to distribute existing services to people on the move or deploy new

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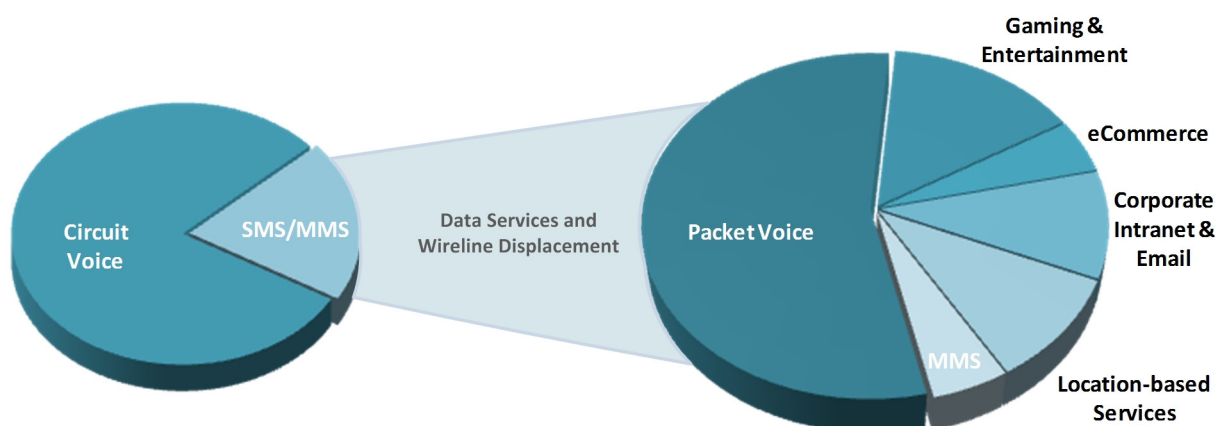


Figure 1 Anticipated Application Mix and Growth

solutions that interface with customers in novel ways.

Drivers

IMS has become the strategic choice of the world's network infrastructure and cellular service providers. As a result of the introduction of IP-based technologies, the industry is about to engage in a fundamental shift in its business perspective and operation. IMS is being sold as a way to reduce the cost of providing services to customers (by eventually switching off their circuit-based voice services), and at the same time allowing them to offer compelling services in a more responsive and economical manner to the consumer.

However, although the reduction in the running costs of the network will bring benefits to the telecoms business, arguably the greatest potential for profit will come from the ability to offer the new and innovative services which will likely become a high growth revenue stream for them. This view was confirmed by a survey of wireless operators conducted by Canaccord, where two thirds of respondents claimed that the primary driver for IMS implementation is new services.

Revenue

With IMS's central role in the wireless infrastructure, the end-user base will be broad and large: possibly everyone with

a mobile phone in a particular network operator's region. Thus, revenue will flow to operators and independent service providers from consumers and from business customers.

Network Providers

Firstly, for telecommunications operators, IMS-based subscriptions and services will drive revenue growth, albeit at the cost to traditional income sources like voice and SMS. IMS will allow operators to identify and categorise data use, and charge appropriately. Figure 1 shows the projected source of revenue growth and the associated proliferation of services predicted by Juniper Research, a network consultancy. The same company predicts that revenue sourced from IMS mobile broadband subscribers will exceed \$70 billion globally by 2014. In preparation IMS equipment vendors have seen a jump in revenue of 108% to \$164 million in Q2 2009 from the previous quarter, lead by Ericsson and Huawei.

Rich voice services will represent the lion's share of IMS average revenue per user for fixed networks, but mobile operators will probably deploy a greater diversity of services over the next few years, including push-to-talk, interactive games, enhanced Web browsing, video conferencing, streaming media content and instant multimedia messaging.

Independents

Besides payments made to network providers, the second

destination of total consumer revenue will be paid to independent application and service providers. This is made possible as network operators are progressing towards integrating IMS and Web-based services and developing secure and reliable charging solutions for complex user sessions. This will drive revenue growth from three strands:

- Payments for mobile applications that use IMS-based services. Similar to the iPhone Apps model.
- Subscriptions to IMS-borne services such as ubiquitous music streaming.
- Pay-per-use services delivered by IMS — made possible due to IMS's inherent payment and identity provision. For example some analysts are predicting that 410 million mobile phone users around the world will be receiving and redeeming tickets on their mobile phones by 2013, and, in the same timeframe, betting alone will be a \$27.5 billion mobile business.

Inform Telecoms & Media, a research group expect the global market for applications and services to be delivered over mobile phones (IMS and non-IMS-based) to balloon, with global revenue reaching \$240 billion by 2012.

But IMS will have two further broad attractions for organisations in particular:

- Communicating within the organisation to manage workflows and interactions with employees spread across campuses or remotely via a collection of online business solutions linked via IMS platforms. Already Nokia are shipping IMS hardware to corporate customers, initially as a ready-made VoIP (Voice over IP) solution, but also as something that can be easily enhanced to communicate with mobile staff and customers.
- Connecting to existing customers in new novel ways. For instance, Juniper Research reckons that 150 million subscribers would have used a banking transaction

over their mobiles by 2011.

IMS providers are expected to compete aggressively with the existing VoIP solutions (e.g. from Cisco's enterprise solutions). Their strong financial position, control of access to mobile subscribers, exiting relationships with other phone providers as well as customers will form a strong business proposition. We expect that pure-play VoIP players will fade from the landscape unless they can form strategic relationships with cellular providers. You may ask the question: who will use Skype when everyone with a mobile phone has, in effect, an Internet accessible VoIP account and address (their existing phone number) and access to a VoIP service from their desktop or mobile? Inherently, there is no such thing as a local or international phone call with IMS — it is all just a data call.

IMS Rollout

In the US, Verizon are due to deploy a version of IMS, called Advanced IMS, in late 2010/early 2011, so too are MetroPCS and Rogers Wireless Communications Inc, and AT&T have confirmed they will pursue IMS in 2011. In Japan, NTT DoCoMo are expected to be one of the first with IMS based technology released to market; followed closely by the Nordic operators: TeliaSonera, Tele2 and Telenor. Vodafone and China Mobile have recently completed trials of the technology this year. Worldwide sales of IMS equipment nearly doubled in 2008, up 94%, with subscribers set to triple in 2009 — albeit from a small starting point. Over a longer timeline, Juniper Research are predicting over 100 million mobile broadband subscribers using IMS/LTE by 2014; with Pyramid research expecting we will reach that mark a year earlier. More optimistically (and unrealistically), In-Stat has forecast ½ billion subscribers by 2013 in China alone.

Emerging Market Trends

Emerging markets often don't have the choice between

wireless and landline. Increasingly, they are bypassing altogether the laying of landlines. Instead, phone and data services are being delivered wirelessly. A direct result of the rapid increase in disposable incomes, China today, there are over 670 million mobile phone subscribers, up from 350 million in 2005. More to the point, these new consumers tend to use their phones to access the Internet, with 117 million subscribers accessing the Internet via their phone. It is not simply China where we see this phenomenon, most of developing Asia and even Africa is using this communications model.

Even if you take many of these predictions with a large pinch of salt, it is still clear that there is serious momentum behind releasing this technology to the market in the next year-or-so. And there will be huge opportunities for profit oriented ventures.

Where IMS Fits In

Supporting the move to IMS is the confluence of wireless access, small powerful devices, and the Internet. Two years ago, the release of Apple's iPhone demonstrated how good design can marry these developments. Other hardware producers and software providers are scrambling to catch

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up. Outside of the hype, the core message is far-reaching: Internet friendly mobile devices are here, and people are not averse to using them — as was the prevailing orthodoxy only a few years before that. We are at an embryonic stage when it comes to exploiting this technology shift.

As of Mid-2010 Apple has over 200,000 applications for download with a reported 5 billion downloads. Something achieved in only a few years. Palm with their App Store, Google with Android, Blackberry with their App Market and Nokia with the Ovi marketplace, have all aggressively jumped on board. All are still living in the shadow of Apple. Figure 2. illustrates the proliferation of application stores; the relationship with independent application sources and; future IMS based applications and service delivery. This source of application deployment appears to offer a new, sustainable, and for some, highly profitable business model. It might even mark the depressing low-watermark of

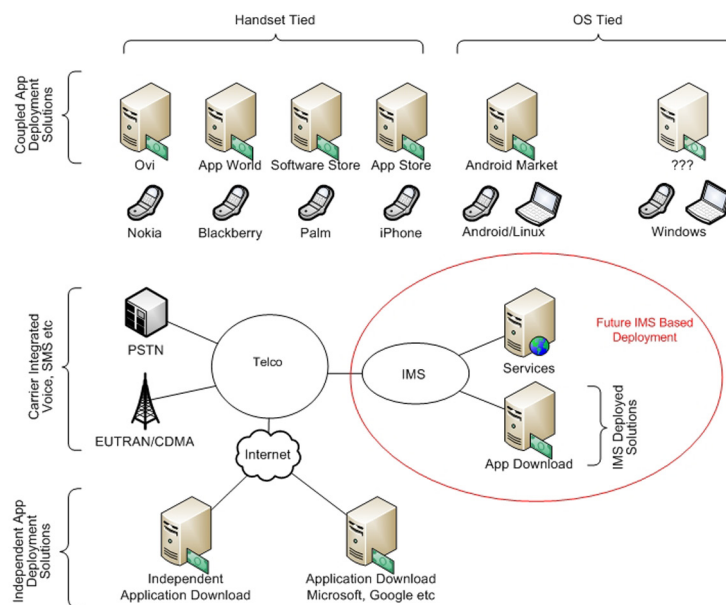


Figure 2 Deployment of applications via application stores and, in future, IMS.

user's expectation that everything from the Internet is free.

The IMS Advantage

The cellular providers have a number of competitive advantages over traditional applications which are tied to a particular platform or device. Some of which are either intrinsic to the network — meaning they are unavailable to other systems, or are difficult to match. We can categorise them into four groups: trust; payment; access; and quality of service (QoS).

Firstly, cellular providers have longstanding relationships with businesses and retail customers: they often know where they live, who they talk to most, what devices they own and use, the customer's credit rating, even their bank details. In turn, customers trust their providers — with many turning over large sums of money to them every month. A very important result of this arrangement is the network can provide a strong identity to partners. For some — financial institutions, or governmental organisations — further authentication will be required, but for most operations, strong network provided identity will greatly enhance customer interaction.

Secondly, cellular operators have a long history of novel payment options which have become suitable to many sections of society. From pay-per-month contracts, to pay-as-you-go top up cards, the cellular providers have a strong business process to bring to the table with regard to payment systems. Other, competing architecture typically have to start from scratch with a sales channel.

Thirdly, cellular providers are not tied to an OS, or device type. Their networks provide coverage for all. Moreover, they can provide intrinsic or well-established access to the fixed-line Public Service Telephone Network (PSTN), including the familiar telephone numbers. Moreover, they are in the unique position to bundle many core indispensable

services together, from access to the PSTN, cellular network, Internet connectivity, and in future, on-demand media.

Finally, cellular providers have a long track record at the provision of excellent messaging (SMS) and voicemail services. Other than that, they have experience with privacy matters such as spam and cold-calling filtering, and dealing with security, regulatory and governmental agencies. IMS aware applications too, display a number of competitive advantages over their non-IMS brethren.

IMS natively supports some very attractive services, such as conferencing, push-to-talk, and media streaming. For instance, Internet-borne telephony, familiar to many as VoIP, is a service made available by IMS to anyone with access to an Internet connection and a subscription. In the next generation of cellular networks, that will be everyone with a mobile phone.

People will be referred to by their existing telephone numbers, but they will become increasingly archaic. SIP addresses, (e.g. sip:bob.jenkins@ims-vodafone.co.uk), similar to an email addresses, will navigate the underlying network to the user.

Importantly, the address is for the user, one-step beyond the device. A call to Bob Jenkins will call up from your contact list the 'bob.jenkins@ims-vodafone.co.uk' address, just as with most email applications. This call will be patched though to the Bob at whatever device he is using or specifies in his profile, be that mobile phone, work PC, home PC or all three. And because the cellular providers already have established relationships with phone companies in all countries, calling landlines, mobile phones, or someone at their PC will all be done through their IMS centre, which, for Bob, is the ims-vodafone.co.uk part of the address, just as 'hotmail.com' is for an email centre.

Another example may offer a more interesting insight:

the location of the device and attached user, is treated as a service provided by the network, regardless of the device. Thus, people don't have to buy expensive mobile phones with GPS and such like to have this information available to them, it comes as part of the network. All devices, from the simplest to the most expensive will be location aware. The answer to the question, where am I? Can now be accurately gained for all devices via the network. So too, with messaging, voice and conferencing. They are inherent within the network, and applications

do not need to develop these services separately. Lets take a final example. An application, say a golf score card, can have an integrated voice, conferencing and messaging facility so the players can communicate with each other. Each player will know what holes the others are playing, and a central scorecard continually updates them with the scores from the other players round. The costs to development this type of application is considerably less with the advent of IMS.

Further Reading

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